Tree Solutions Inc
Consulting Arborists

Project No. TS - 4713

Arborist Report

TO:	Michelle Beebe, Farmhouse Cottages LLC
SITE:	12652 94th Ave NE, Kirkland, WA 98033
RE:	Tree Inventory
DATE:	March 17, 2015
PREPARED BY:	Sean Dugan, Registered Consulting Arborist # 457 ISA Board Certified Master Arborist #PN- 5459B ISA Qualified Tree Risk Assessor

Summary
I have identified twenty (20) significant size trees on site; Ten (10) trees are proposed to be retained and protected throughout all phases of site work activities. Five (5) trees are not viable for retention due to poor health and/or structure. Five (5) trees will be removed based on the location of proposed site development.

None of the trees designated to remain should be negatively impacted by the removal of non-viable trees. For this 41,255 square foot site, the Kirkland Zoning Code (95.33) requires a **minimum tree density of 28.5** credits; if the seven suggested trees are retained and protected, the total tree credits for the site would equal **93.5**.

Trees located in the required setbacks may be considered by the city of Kirkland to be "High Retention Value" trees and will require being retained to the maximum extent feasible.

A single tree on an adjacent property to the east has a canopy that overhangs the site by approximately 19 feet. In my opinion, this tree will not be negatively impacted by site work.

Assignment & Scope of Report
This report outlines the site inspection of the above listed site by Sean Dugan, of Tree Solutions Inc., on March 6, 2015. I was asked to evaluate the significant trees on site. I was asked to document the species, size, health and structural condition, drip lines, viability and proposed action for each tree, as well as produce an Arborist Report addressing tree retention possibilities for the site throughout construction. Michelle Beebe, owner of the property, requested these services to acquire information for project planning in accord with requirements set by the City of Kirkland.

Specifics for each tree can be found in the attached Table of Trees. A site map with tree locations can be found in Figure 1: Site Map. A Glossary and References follow the site map. Limits of assignment can be found in Appendix A. Methods can be found in Appendix B. Additional assumptions and limiting conditions can be found in Appendix C.

Observations and discussion

Site

The 41,225 square foot site fronts 94th Ave in the North Juanita neighborhood of Kirkland. A single-family structure, apartment/garage, and sports court currently exist on the site. The property is being proposed for redevelopment with several additional cottages being added around the parcel. The design plan has yet to be established.

Site Trees

Twenty significant size trees were assessed and inventoried on the property. Information specific to each tree can be found in the attached Table of Trees. Ten trees are proposed to be retained and protected throughout all phases of site work activities. A general tree preservation specification has been attached to this report. Five trees are not viable for retention due to poor health or structure. Five trees will be removed based on the location of proposed site construction.

Trees located in the required setbacks are likely to be considered by the city of Kirkland to be "High Retention Value" trees and will require being retained to the maximum extent feasible. All site development alternatives will need to be considered when planning for the preservation of these trees.

Tree Density Credits

The Kirkland Zoning Code (95.33) requires tree density to satisfy 30 tree credits per acre. The property is 41,255 sq. ft., or 0.95 acres. Therefore, a tree density worth 28.5 tree credits (0.95 x 30 = 28.5) is required in order to meet the minimum requirement. Based on discussions with the property owner trees proposed for retention will equal 93.5 tree credits.

Adjacent Site Trees

A single Bitter cherry (*Prunus emarginatta*) tree stands to the east of the subject property. I estimate the size of the tree to be approximately 18 inches in diameter. The tree is in fair health and structural condition. The canopy of the tree hangs over the site by approximately 19 feet. The limits of disturbance for this tree should not exceed the required side yard setback in order to assure the tree is viable during and after site development. Protection measures will need to be established to assure the tree is not compromised.

Recommendations

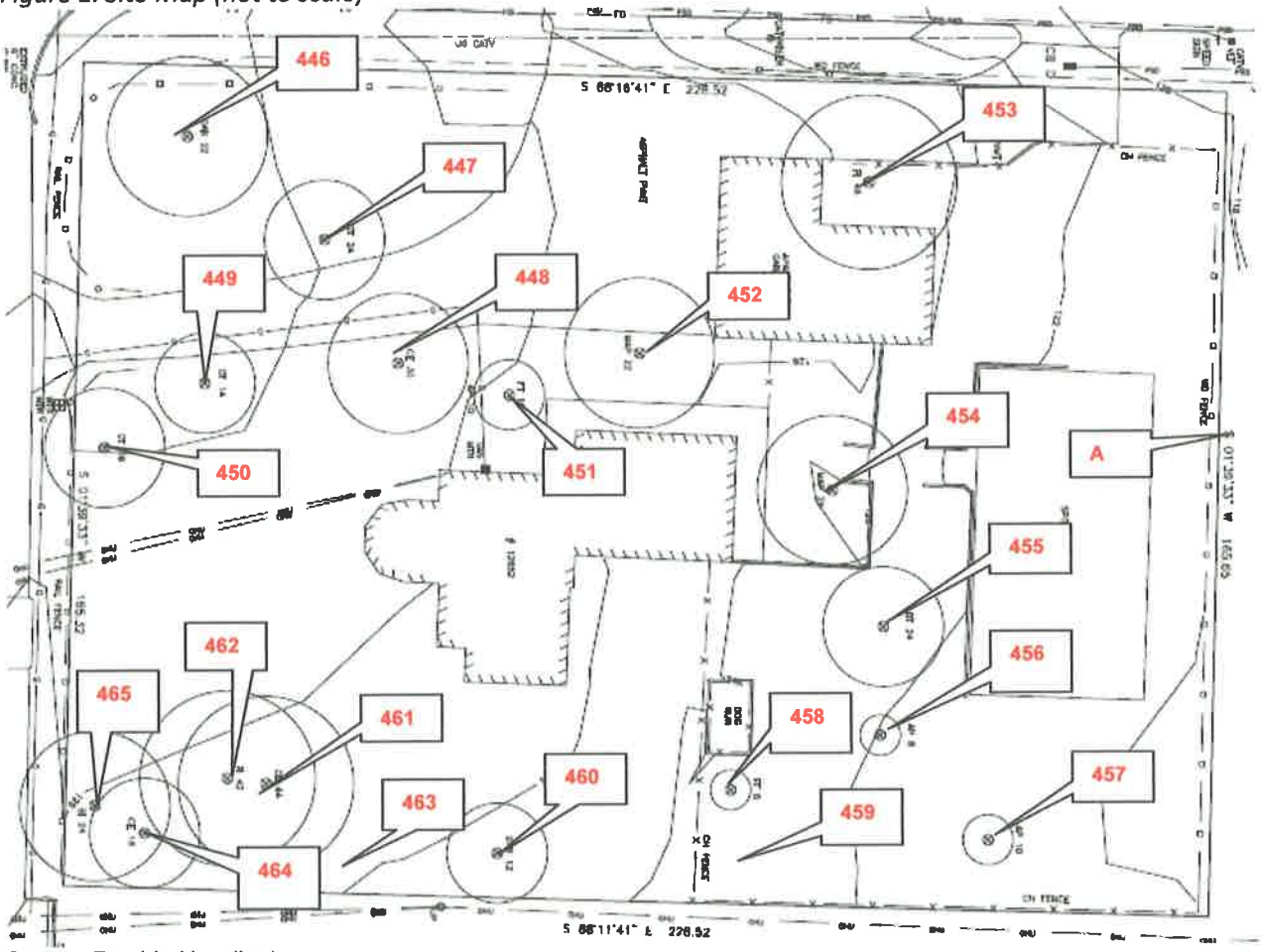
- Obtain all necessary permits from the city prior to site development.
- Install tree protection measures before heavy equipment is brought on site.
- Inform all site workers on the tree protection requirements.

Attachments

Tree Preservation Specification

Site Map and Plans

Figure 1. Site Map (not to scale)



Source: Provided by client

Glossary

co-dominant stems: stems or branches of nearly equal diameter, often weakly attached (Matheny *et al.* 1998)
crown/canopy: the aboveground portions of a tree (Lilly 2001)
DSH: diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)
ISA: International Society of Arboriculture
included bark: bark that becomes embedded in a crotch between branch and trunk or between codominant stems and causes a weak structure (Lilly 2001)
significant size: a tree measuring 6" DSH or greater
structural defects: flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (Lilly 2001)

References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Dunster & Associates Environmental Consultants Ltd. Assessing Trees in Urban Areas and the Urban-Rural Interface, US Release 1.0. Silverton: Pacific Northwest Chapter ISA, 2006.

Kirkland Zoning Code Chapter 95.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Appendix A - Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

Appendix B - Methods

I evaluated tree health and structure utilizing **visual tree assessment (VTA)** methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts (Mattheck & Breloer 1994). An understanding of the uniform stress allows me to make informed judgments about the condition of a tree.

I measured the diameter of each tree at 54 inches above grade, **diameter at standard height (DSH)**. If a tree has multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the Guide for Plant Appraisal, 9th Edition, published by the Council of Tree and Landscape Appraisers.

I used binoculars to inspect the upper parts of the trees.

I tagged each tree with an aluminum racetrack shaped id tag containing the number as it relates to the site map and table of trees.

Appendix C - Assumptions & Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.

2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.

3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.

4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.

5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.

6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.

7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.

8. All photographs included in this report were taken by Tree Solutions Inc. during the documented site visit, unless otherwise noted.

9. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.

10. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.

11. Loss or alteration of any part of this Agreement invalidates the entire report.

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Table of Trees
12652 94th Ave NE
Kirkland, WA 98033

Date of Inventory: 03.06.2015
Table Prepared: 03.16.2015

							Drip line Radius (feet)							
Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
446	*Quercus palustris*	Pin oak	20.7	Good	Good	up to 40% of the drip line area	17	17	17	17	yes	Retain	6	Shallow roots
447	*Juglans regia*	English walnut	22.0	Fair	Good	up to 40% of the drip line area	19	29	25	20	yes	Remove	0	Scaffold midway up canopy to northwest internal crack. Slow growth below fork
448	*Thuja plicata* 'Zebrina'	Zebra redcedar	28.0	Good	Good	up to 40% of the drip line area	14	19	17	17	yes	Retain	10	Root obstruction on walk/driveway
449	*Crataegus monogyna*	Common hawthorn	14.1	Fair	Good	up to 40% of the drip line area	13	13	13	13	yes	Remove	0	Slow growth
450	*Acer rubra*	Red maple	15.0	Good	Poor	up to 40% of the drip line area	15	16	16	16	yes	Remove - Structure	0	Narrow angle and included bark, reaction wood fair, will eventually need a bolt to stabilize. Shallow roots damaged, girdling root on west side
451	*Pyrus sp.*	Pear	10.0	Fair	Poor	up to 40% of the drip line area	8	8	8	8	No	Remove - Structure	0	Slow growth, suppressed by *Thuja plicata* 'Zebrina'. Extensive internal decay, 90% hollow.
452	*Acer platanoidies*	Norway maple	19.0	Good	Good	up to 40% of the drip line area	18	19	18	17	yes	Retain	5.5	west side drip line contacts structure
453	*Pseudotsuga menziesii*	Douglas-fir	42.0	Good	Good	up to 40% of the drip line area	24	26	25	30	yes	Retain	17	English ivy to 20 feet, root obstruction of garage foundation, retention of foundation will aid in protection of tree roots
454	*Platanus occidentalis*	Sycamore	29.0	Good	Good	up to 40% of the drip line area	30	21	30	21	yes	Retain	10.5	Root obstruction of concrete walkway
455	*Malus sp.*	Apple	23.0	Good	Fair	up to 40% of the drip line area	10	18	15	19	yes	Retain	7.5	Fruit pruning is not maintained. Many old pruning cavities, tension side wound on west scaffold. Sprout management recommended.
456	*Malus sp.*	Apple	10.0	Good	Fair	up to 40% of the drip line area	9	11	11	9	yes	Remove	0	Fruit pruning is not maintained, sprout management recommended.
457	*Malus sp.*	Apple	10.0	Good	Fair	up to 40% of the drip line area	11	14	11	12	yes	Retain	1	Fruit pruning is not maintained, sprout management recommended.
458	*Prunus subhirtella*	Flowering cherry	8.5	Fair	Fair	up to 40% of the drip line area	9	9	9	9	yes	Remove	0	Cherry Bark Tortrix (CBT), brown rot, thin. CBT treatment recommended if retained

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Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	North	East	South	West	Viability	Proposed Action	Credits	Notes
459	*Prunus avium*	Bird cherry	11.0*	Good	Poor	up to 40% of the drip line area	8	8	8	8	No	Remove Structure	0	Six co-dominant stems each 4.5 inches DSH. Narrow angle attachment, falling over at roots, corrective growth present.
460	*Picea pungens*	Blue spruce	11.5	Fair	Good	up to 40% of the drip line area	10	10	10	10	yes	Remove	0	Heavy spidermite presence
461	*Thuja plicata*	Western redcedar	41	Good	Fair	up to 40% of the drip line area	22	25	18	12	yes	Retain	16	Old crown failure, forked top. Monitor junction point of the leads for resin flow after severe loading events, this would indicate a crack has developed and the pasrts should be further assessed for risk
462	*Pseudotsuga menziesii*	Douglas-fir	40.6	Good	Good	up to 40% of the drip line area	20	20	12	25	yes	Retain	16	Dead hanging branches. Tire chain enveloped by tree. Remove tire and chain without damaging trunk, reduce long overextended limbs, crown clean
463	*Sorbus sp.*	Ash	10	Poor	Poor	up to 40% of the drip line area	0	0	0	0	No	Remove - Health	0	appears dead
464	*Chamaecyparis lawsoniana*	Port Orford cedar	17.2	Good	Good	up to 40% of the drip line area	9	9	9	9	yes	Retain	4	
465	*Betula pendula*	European birch	29.1*	Fair	Poor	up to 40% of the drip line area	18	14	19	25	No	Remove - Structure	0	Multiple poor pruning events. 3 co-dominant trunks *13.0, 16.7, 20.0, Brown Birch Borer evidence.
Additional notes:												**Total Tree Credits**	**93.5**	
	DSH (Diameter at Standard Height) is measured 4.5 feet above grade.													
	Multi-stem trees are noted (*), and a single stem equivalent is calculated using the method defined in the Guide for Plant Appraisal 9th Ed.													